

Claims

1. A centrifuge for the separation and/or treatment of cells in a substantially annular or partially annular separation bag connected by at least one tube to at least one secondary bag,
5 comprising:
 a rotor including:
 a rotor shaft having
 a rotation axis, and
 a hollow upper portion defining a central compartment extending around
10 the rotation axis for receiving the at least one secondary bag;
 a rotor bowl connected to the rotor shaft so as to be centered with respect to the rotation axis, and connected to the hollow upper portion of the rotor shaft and
having
 a separation compartment for receiving the separation bag.
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2. The centrifuge according to claim 1, further comprising
 pinch valves for the at least one tube connecting the separation bag to the at least one
secondary bag.
- 20 3. The centrifuge according to claim 2, further comprising
 an automatic programmed control system for controlling the pinch valves.
4. The centrifuge according to claim 1, further comprising
 means for selectively squeezing the separation bag within the separation compartment so
25 as to transfer a separated component from the separation bag into a secondary bag in the
central compartment.

5. The centrifuge according to claim 4, wherein the means for selectively squeezing the separation bag further comprises:

a flexible membrane secured to the rotor bowl so as to define a hydraulic chamber within the separation compartment;

5 a hydraulic system connected to the hydraulic chamber by a duct extending through the rotor shaft for pumping a hydraulic liquid to and from the hydraulic chamber.

6. The centrifuge according to claim 1, wherein the separation compartment further comprises:
a frusto-conical support surface for supporting the separation bag.

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7. The centrifuge according to claim 6, wherein the frusto-conical support surface of the separation compartment flares from the hollow upper portion of the rotor shaft below the opening of the central compartment.

15 8. The centrifuge according to claim 6, wherein the frusto-conical support surface of the separation compartment flares from the hollow upper portion of the rotor shaft above the opening of the central compartment.

20 9. The centrifuge according to claim 1, for the separation and/or treatment of cells in a container system wherein the container system further comprises:

the substantially annular or partially annular separation bag having

an outer periphery and

an inner periphery;

the at least one secondary bag;

25 the at least one tube connecting the separation bag to the at least one secondary bag; and
a container for receiving the at least one secondary bag and designed to removably fit within the central compartment defined by the hollow upper portion of the rotor shaft of the centrifuge.

10. A container system for the separation and/or treatment of cells in a centrifuge according to claim 1, wherein the container system further comprises:

the substantially annular or partially annular separation bag having

an outer periphery and

an inner periphery;

the at least one secondary bag;

the at least one tube connecting the separation bag to the at least one secondary bag;

a container for receiving the at least one secondary bag and designed to removably fit within the central compartment defined by the hollow upper portion of the rotor shaft of a centrifuge.

11. The container system according to claim 10, the container further comprising a sleeve having a flange extending outwardly.

12. The container system according to claim 11, wherein the sleeve is made of a rigid plastic material.

13. The container system according to claim 11, wherein the sleeve directly fits within the central compartment.

14. The container system according to claim 11, wherein the sleeve fits within the central compartment through spacing elements that keeps the sleeve centered about a central axis of the central compartment.

15. The container system according to claim 11, wherein the separation bag is secured to the flange of the container by an area thereof adjacent its inner periphery.

16. The container system according to claim 11, wherein the separation bag further comprises: holes in an area adjacent its inner periphery; and

the container further comprising

pins protruding from an upper surface of the flange for fitting the holes of the separation bag.

17. The container system according to claim 11, comprising at least two secondary bags formed
5 by stacked sheets of flexible plastic material that are welded together at a periphery thereof.

18. The container system according to claim 11, further comprising:

a first secondary bag connected to the separation bag by a tube including

a one-way valve allowing a flow of liquid from the first secondary bag to the
10 separation bag, and

a second secondary bag connected to the separation bag by a tube including

a one-way valve allowing a flow of liquid from the separation bag to the second
secondary bag.

19. The container system according to claim 11, wherein the at least one tube is connected to the
15 separation bag at the inner periphery thereof.

20. The container system according to claim 11, wherein the at least one tube comprises:

a portion of tube having a first end connected to the separation container and a second
20 end that branches into a first tube portion connected to a first secondary bag and
a second tube portion connected to a second secondary bag.

21. The container system according to claim 11, further comprising:

a first secondary bag containing a washing liquid and

25 a second secondary bag intended to receive a waste liquid.

22. The container system according to claim 11, wherein the at least one secondary bag is made of
a plastic material that is suited for storing a thrombocyte suspension.